REMARKS

Reconsideration and withdrawal of the claim rejections are requested in view of the amendments and remarks herein.

I. STATUS OF CLAIMS AND FORMAL MATTERS

Claims 1-6, 8-12, 14-16 and 27 are under consideration in this application. Claims 1-6, 9-12 and 14-16 have been amended. Claims 12 and 14-16 are no longer multiple dependent claims, obviating the objection under 37 C.F.R. §1.75(c). Claim 27 has been added to round out the scope of protection to which Applicants are entitled. Support for the amended claims is found throughout the specification. Specifically, support for the recitation "under stringent conditions" in claims 1 and 6 can be found on page 5, line 23 of the application. Support for the amendment to claim 10 can be found on page 14, lines 34-36. Support for new claim 27 can be found on page 5, line 6. No new matter is added.

The objections to claims 12, 14-16 have been obviated by the instant amendment.

It is submitted that the claims, herewith and as originally presented, are patentably distinct over the prior art cited by the Examiner, and that these claims were in full compliance with the requirements of 35 U.S.C. §112. The amendments of and additions to the claims, as presented herein, are not made for purposes of patentability within the meaning of 35 U.S.C. §§§§ 101, 102, 103 or 112. Rather, these amendments and additions are made simply for clarification and to round out the scope of protection to which Applicants are entitled. Furthermore, it is explicitly stated that the herewith amendments should not give rise to any estoppel, as the herewith amendments are not narrowing amendments.

II. THE REJECTIONS UNDER 35 U.S.C. §112, 2ND PARAGRAPH ARE OVERCOME

Claim 10 was rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for reciting "regulatory elements which ensure synthesis of an untranslatable RNA in pro- or eukaryotic cells". Claim 10 has been amended to clarify what is intended.

Claim 14 was rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for depending on a non-elected claim. Claim 14 has been amended to depend on claim 1, obviating the rejection.

Claim 16 has been amended obviating the formal rejection of same.

Reconsideration and withdrawal of the rejections under §112, second paragraph, are requested.

III. THE REJECTIONS UNDER 35 U.S.C. §112, 1ST PARAGRAPH ARE OVERCOME

Claims 1-6, 8-12 and 14-16 were rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking adequate written description. The rejection is traversed.

Claim 1 has been amended to encompass (a) the nucleic acid molecule encoding the protein of SEQ ID NO:2, (b) the nucleic acid molecule of SEQ ID NO:1, (c) nucleic acid molecules that hybridize under stringent conditions or are complementary to (a) or (b), and (d) nucleic acid molecules whose sequences deviate from those of (a)-(c) due to the degeneracy of the genetic code. As admitted on page 5 of the Office Action, there is clearly written description for (a) and (b). The phrase "under stringent conditions" has been added to part (c) of the claim to more clearly define how hybridization is to be performed. The section of the specification beginning on page 5, line 21 discusses hybridization and discloses the preferred conditions.

In addition, the Examiner's attention is drawn to U.S. Patent Nos. 6,548,065, 6,403,373, and 6,159,731 (copies enclosed). Each of these recently issued patents contains an analogous claim to claim 1 of the instant application, and each contains a similar disclosure regarding hybridization.

Claims 1-6, 8-12 and 14-16 were rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enablement. The rejection is traversed.

As discussed above, claim 1 has been amended for clarity and to remove reference to a part of SEQ ID NO:1. As claim 1 currently reads, there would be no undue experimentation on the part of the skilled artisan to isolate a nucleic acid molecule that encodes the amino acid sequence of SEQ ID NO:2, or that has the nucleotide sequence of SEQ ID NO:1. Further, specific guidance is given in the specification regarding how to isolate a nucleic acid molecule that hybridizes under stringent conditions to either of the aforementioned nucleic acid molecules. Therefore, the structural characteristics of the claimed nucleic acid molecules are clearly set forth.

Page 11 of the Office Action states "[i]n view of the lack of detailed information regarding the structural and functional requirements of the polypeptide of SEQ ID NO:2 and its variants, and the unpredictability of polypeptide function from mere amino acid sequence, it would be unpredictable whether the polypeptides encoded by the claimed nucleic acid molecules

would have the function of a wheat starch synthase." As discussed above, claim 1 unambiguously recites the structure of the claimed molecules. In addition, claim 1 contains the functional limitation that the nucleic acid molecule has the function of a wheat starch synthase. Characteristics of starch synthases and how to identify them are described on page 7, lines 22-29. There is no reason to expect that one of skill in the art could not identify a member of the claimed genus based on its structural and functional characteristics.

It is submitted that the claims are in compliance with the first paragraph of §112, and reconsideration and withdrawal of the rejections thereunder are requested.

IV. THE REJECTIONS UNDER 35 U.S.C. §102 ARE OVERCOME

Claims 1-3, 5 and 6 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Block *et al.*, 1996. The rejection is traversed.

Block *et al.* describes only a fragment of the claimed molecule, whereas the instant application discloses the full-length clone for the first time. The isolation of the full-length clone allowed overexpression and preparation of an active starch synthase I (SSI) protein. Furthermore, possession of the full-length clone allows SSI activity to be increased in plant cells or introduced into plant cells that do not naturally express it. Finally, the instant invention provides the sequence of the N-terminal region of the nucleic acid encoding SSI, enabling targeting of the protein to plastids, for overexpression therein.

In addition, there is no evidence that the nucleic acid sequence of Block *et al.* encodes a protein with the function of a wheat starch synthase. As was pointed out by the Examiner on page 10 of the Office Action, the "predictability of which amino acid(s) can be removed from or added to a polypeptide's sequence and still result in similar or higher activity...is extremely complex." Certainly the fact that the fragment of Block *et al.* is missing the first 717 bases of SEQ ID NO:1 casts considerably doubt on whether such a fragment would have the function of a wheat starch synthase.

Claims 1-6, 8, 9, 12 and 14-16 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Block *et al.*, 1997. The rejection is traversed.

Block *et al.* relates to soluble starch synthase II (SSII), which is an entirely different enzyme than that of the instant invention, SSI. The sequence of SSII is different from that of SEQ ID NO:2, and the nucleic acid molecule of Block *et al.* will not hybridize under stringent conditions to either of the nucleic acid molecules claimed in parts (a) or (b) of claim 1.

It is submitted that neither cited Block *et al.* references anticipates the pending claims. Subsequently, reconsideration and withdrawal of the §102 rejections are requested.

CONCLUSION

In view of the remarks and amendments herewith, it is believed that the application is in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

1. (Amended) An isolated nucleic acid molecule encoding a protein with the function of a wheat starch synthase, selected from the group consisting of

(a) a nucleic acid molecule encoding a protein comprising the amino acid sequence of SEQ ID NO:2[shown under Seq ID NO. 2],

(b) a nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO:1[shown under Seq ID No. 1 or a part thereof,] or a ribonucleotide sequence corresponding therewith;

(c) a nucleic acid molecule which hybridizes under stringent conditions with one of the nucleic acid molecules mentioned under (a) or (b) or is complementary thereto, and

(d) a nucleic acid molecule whose nucleotide sequence deviates from the sequence of a nucleic acid molecule mentioned under (a), (b) or (c) owing to the degeneracy of the genetic code.

2. (Amended) The[A] nucleic acid molecule as claimed in claim 1, which is a DNA molecule.

3. (Amended) The[A] DNA molecule as claimed in claim 2, which is a cDNA molecule.

4. (Twice Amended) The[A] nucleic acid molecule as claimed in claim 1, comprising[containing] regulatory elements.

5. (Amended) The[A] nucleic acid molecule as claimed in claim 1, which is an RNA molecule.

6. (Twice Amended) An isolated nucleic acid molecule which specifically hybridizes under stringent conditions with a nucleic acid molecule as claimed in claim 1.

9. (Amended) The[A] vector as claimed in claim 8, wherein said nucleic acid molecule is operably linked in sense orientation to regulatory elements which ensure transcription and synthesis of a translatable RNA in prokaryotic[-] or eukaryotic cells.

10. (Amended) The[A] vector as claimed in claim 8, wherein said nucleic acid molecule is operably linked in sense orientation with respect to regulatory elements, and wherein a cosuppression effect is achieved[which ensure the synthesis of an untranslatable RNA] in prokaryotic[-] or eukaryotic cells.

11. (Amended) The[A] vector as claimed in claim 8, wherein said nucleic acid molecule is operably linked in antisense orientation with respect to regulatory elements which ensure the synthesis of an untranslatable RNA in prokaryotic[-] or eukaryotic cells.

12. (Amended) A host cell which is transformed with a nucleic acid molecule as claimed in claim 1,[one or more of claims 1 to 5] or with a vector as claimed in claim 8,[one or more of claims 8 to 11] or a cell which is derived from the host cell[such a cell].

14. (Amended) A process for the preparation of a protein encoded by the nucleic acid molecule as claimed in claim 1[as claimed in claim 13], wherein a host cell as claimed in claim 12 is cultured under conditions which permit said protein to be synthesized, and said protein is isolated from the cultured cells and/or the culture medium.

15. (Amended) A process for generating a transgenic plant cell, wherein

(a) a nucleic acid molecule as claimed in claim 1[one or more of claims 1 to 5]

or

(b) a vector as claimed in claim 8[one or more of claims 8 to 11]

is integrated into the genome of a plant cell.

16. (Amended) A transgenic plant cell which has been transformed with a nucleic acid molecule as claimed in claim 1,[one or more of claims 1 to 5] or with a vector as claimed in claim 8,[one or more of claims 8 to 11] or a cell which is derived from the plant cell[such a cell].